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**Attachment 1**  
**Distinguishing Characteristics and**  
**Supporting Framework**

**DRAFT - For Discussion Only**

**Supporting Framework**  
**August 25, 1997**

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## **Draft Distinguishing Characteristics**

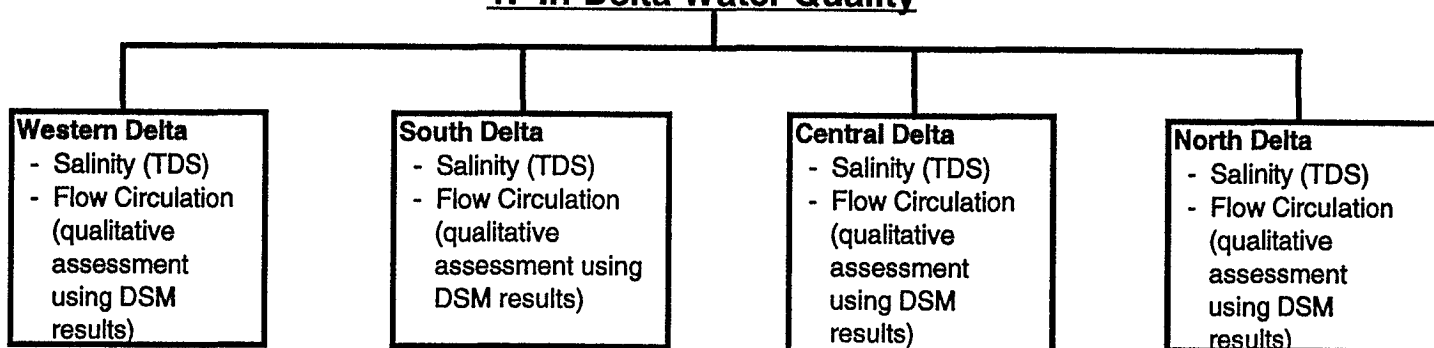
- |                                  |   |
|----------------------------------|---|
| 1 In-Delta Water Quality         | 10 Risk to Export Water Supplies        |
| 2 Export Water Quality           | 11 Total Cost                           |
| 3 Diversion Effects on Fisheries | 12 Assurances Difficulty                |
| 4 Delta Flow Circulation         | 13 Habitat Impacts                      |
| 5 Storage and Release of Water   | 14 Land Use Changes                     |
| 6 Water Supply Opportunities     | 15 Socio-economic Impacts               |
| 7 Water Transfer Opportunities   | 16 Consistency with Solution Principles |
| 8 Operational Flexibility        | 17 Ability to Phase Facilities          |
| 9 South Delta Access to Water    | 18 Brackish Water Habitat               |

**DRAFT**  
**DISTINGUISHING CHARACTERISTICS**  
**DECISION MATRIX**

Alternative	Alternative Variation																	
	In-Delta Water Quality	Export Water Quality	Diversion Effects on Fisheries	Delta Flow Circulation	Storage and Release of Water	Water Supply Opportunities	Water Transfer Opportunities	Operational Flexibility	South Delta Access to Water	Risk to Export Water Supplies	Total Cost	Assurances Difficulty	Habitat Impacts	Land Use Changes	Socio-economic Impacts	Consistency with Solution Principles	Ability to Phase Facilities	Brackish Water Habitat
Existing Conditions																		
No-Action Alternative																		
Existing System Conveyance	1A																	
	1B																	
	1C																	
	2A																	
Modified Through Delta Conv.	2B																	
	2D																	
	2E																	
	3A																	
Dual Delta Conveyance	3B																	
	3E																	
	3H																	
	3I																	

See Attachment 2 for example rankings.

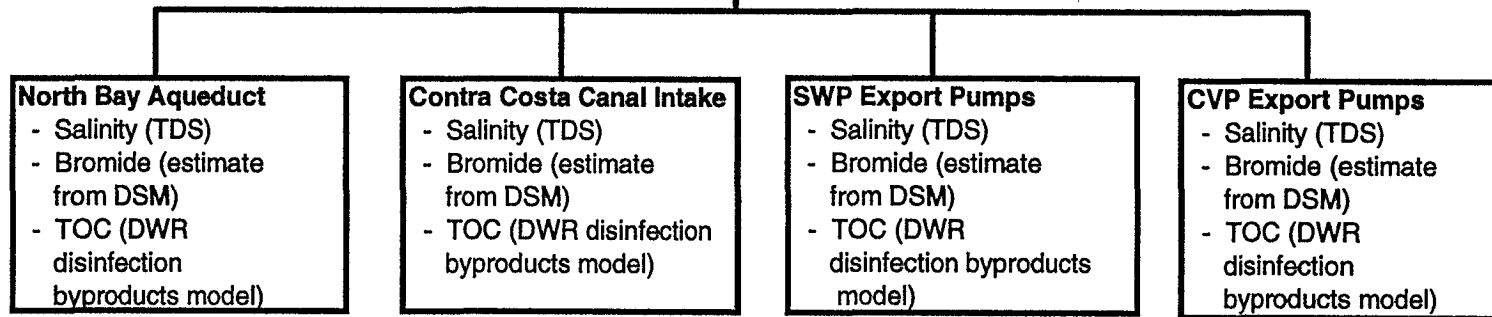
## In-Delta WQ

**1. In-Delta Water Quality****Table 1.1 Summary**

Alternative	Western Delta		South Delta		Central Delta		North Delta	
	Salinity	Circulation	Salinity	Circulation	Salinity	Circulation	Salinity	Circulation
Exist. Cond.								
No-action								
1A								
1B								
1C								
2A								
2B								
2D								
2E								
3A								
3B								
3E								
3H								
3I								

Lower salinity will be provided a higher ranking.  
 Better flow circulation will be provided a higher ranking.

## 2. Export Water Quality



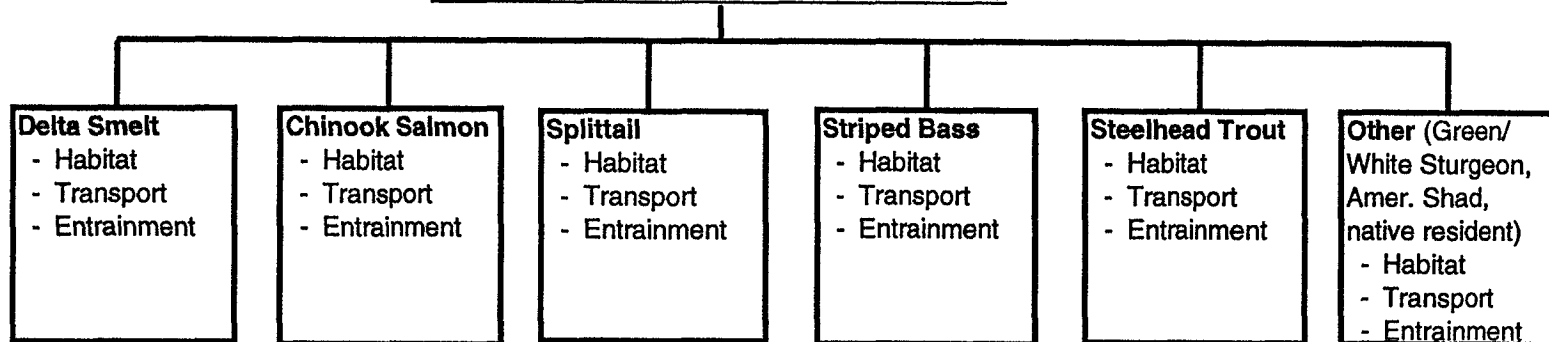
**Table 2.1 Summary**

Alternative	North Bay			Contra Costa			SWP Export			CVP Export Pumps		
	Salinity	Bromide	TOC	Salinity	Bromide	TOC	Salinity	Bromide	TOC	Salinity	Bromide	TOC
Exist. Cond												
No-action												
1A												
1B												
1C												
2A												
2B												
2D												
2E												
3A												
3B												
3E												
3H												
3I												

Lower salinity, bromide, and TOC will be provided higher rankings.

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### 3. Diversion Effects on Fisheries

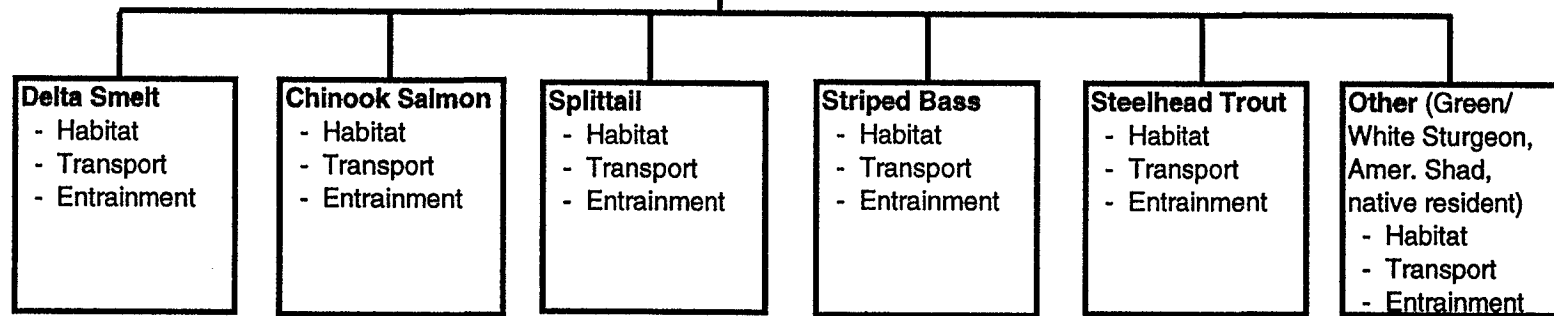


**Table 3.1 Summary**

Alternative	Delta Smelt			Chinook Salmon			Splittail			Striped Bass			Steelhead Trout			Other		
	Habitat	Trans.	Entrain.	Habitat	Trans.	Entrain.	Habitat	Trans.	Entrain.	Habitat	Trans.	Entrain.	Habitat	Trans.	Entrain.	Habitat	Trans.	Entrain.
Exist. Cond.																		
No-action																		
1A																		
1B																		
1C																		
2A																		
2B																		
2D																		
2E																		
3A																		
3B																		
3E																		
3H																		
3I																		

Values are on a scale from 0 to 1; with 1 representing the best performance achievable from the range of alternatives.

#### 4. Delta Flow Circulation

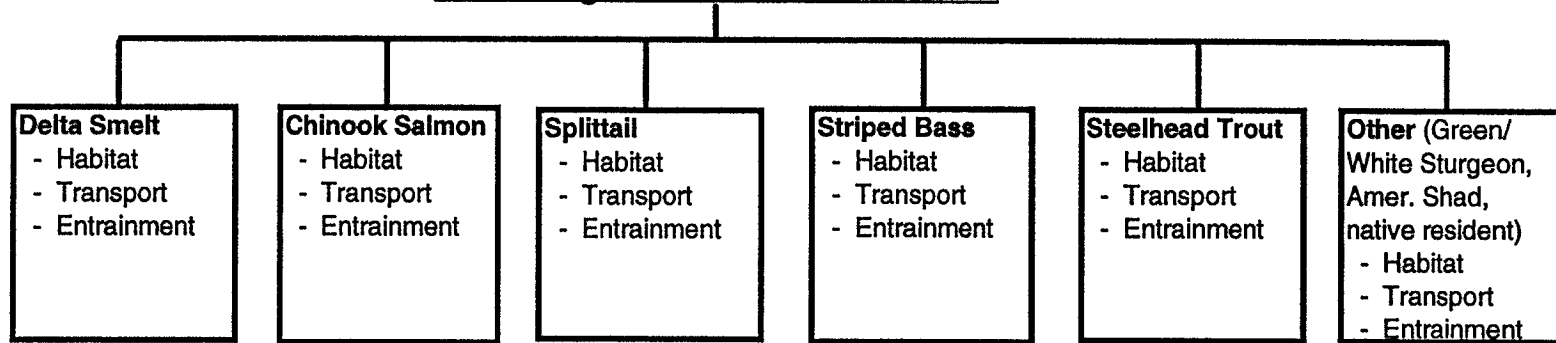


**Table 4.1 Summary**

Alternative	Delta Smelt			Chinook Salmon			Splittail			Striped Bass			Steelhead Trout			Other		
	Habitat	Trans.	Entrain.	Habitat	Trans.	Entrain.	Habitat	Trans.	Entrain.	Habitat	Trans.	Entrain.	Habitat	Trans.	Entrain.	Habitat	Trans.	Entrain.
Exist. Cond.																		
No-action																		
1A																		
1B																		
1C																		
2A																		
2B																		
2D																		
2E																		
3A																		
3B																		
3E																		
3H																		
3I																		

Values are on a scale from 0 to 1; with 1 representing the best performance achievable from the range of alternatives.

## 5. Storage and Release of Water



**Table 5.1 Summary**

Alternative	Delta Smelt			Chinook Salmon			Splittail			Striped Bass			Steelhead Trout			Other		
	Habitat	Trans.	Entrain.	Habitat	Trans.	Entrain.	Habitat	Trans.	Entrain.	Habitat	Trans.	Entrain.	Habitat	Trans.	Entrain.	Habitat	Trans.	Entrain.
Exist. Cond.																		
No-action																		
1A																		
1B																		
1C																		
2A																		
2B																		
2D																		
2E																		
3A																		
3B																		
3E																		
3H																		
3I																		

Values are on a scale from 0 to 1; with 1 representing the best performance achievable from the range of alternatives.



## 6. Water Supply Opportunities (new water generated from alternatives)

**CALFED environmental water supply benefits**  
(acre-feet);

- avg. year water supply
- critical year water supply

**CALFED agricultural/Urban water supply benefits** (acre-feet)

- avg. year water supply

Assumes 1/3 of developed supply allocated to environmental uses and 2/3 to ag./urban uses.

Water acquired from willing sellers for ecosystem needs is accounted for separately.

No regional breakdown is available at this time.

**Table 6.1 Summary**

Alternative	Envir. Water Benefits		Ag./Urban Water Benefits		\$/AF developed (avg. Yr.) (for reference only)
	Crit. Yr. (TAF)	Avg. Yr. (TAF)	Crit. Yr. (TAF)	Avg. Yr. (TAF)	
Exist. Cond.					
No-action					
1A					
1B					
1C					
2A					
2B					
2D					
2E					
3A					
3B					
3E					
3H					
3I					

Water supply opportunity increase over the no-action alternative; more supply = higher ranking.

- For reference, Avg. Yr. no-action water supply approximately \_\_\_ million acre-feet
- For reference, Critical Yr. no-action water supply approximately \_\_\_ million acre-feet

## 7. Water Transfer Opportunities

### Available Delta Conveyance/Export Capacity

- avg. year capacity (AF)
- dry year capacity (AF)

### Market Interest

- market interest vs. \$/AF  
from sensitivity analysis:
- avg. year capacity (AF)
  - dry year capacity (AF)

Provide available capacity under regulatory and physical constraints.

**Table 7.1 Summary**

Alternative	Available Conveyance/Export Capacity		Market Interest	
	Crit. Yr. (TAF)	Avg. Yr. (TAF)	Crit. Yr. (TAF)	Avg. Yr. (TAF)
Exist. Cond.				
No-action				
1A				
1B				
1C				
2A				
2B				
2D				
2E				
3A				
3B				
3E				
3H				
3I				

Water transfer opportunity increase over the no-action alternative; more opportunity = higher ranking.

## 8. Operational Flexibility

### Available facilities (consider flexibility provided by:)

- South Delta export capacity
- Upstream storage (AF)
- Aqueduct storage (AF)
- Isolated facility (cfs)
- In-Delta storage (AF)
- Alternate diversion points
- Groundwater storage

### Ability to "Make-up" water

- ability for "make-up" water supply for various assumed protective actions (based on DWRSIM sensitivity analyses)
- avg. year capacity (AF)
- dry year capacity (AF)

**Table 8.1 Summary**

Alternative	Available facilities	Ability to "make-up" water	
		Crit. Yr. (TAF)	Avg. Yr. (TAF)
Exist. Cond.			
No-action			
1A			
1B			
1C			
2A			
2B			
2D			
2E			
3A			
3B			
3E			
3H			
3I			

A higher ranking will be provided alternatives with more available facilities which increase flexibility.

A higher ranking will be provided alternatives which have a higher ability to "make-up" water potentially lost to protective actions.

## 9. South Delta Access to Water

Consider stage (water level) or other access to water from:

- thru Delta conveyance
- isolated conveyance (via direct connenctions)
- operable barriers
- other opportunities?

**Table 9.1 Summary**

Alternative	Description of Access	Measure of Access (0-1)
Exist. Cond.		
No-action		
1A		
1B		
1C		
2A		
2B		
2D		
2E		
3A		
3B		
3E		
3H		
3I		

Values are on a scale from 0 to 1; with 1 representing the best performance achievable from the range of alternatives.

## Risk to Export

**10. Risk to Export Water Supplies**

Consider:

- earthquake risk to conveyance
- flood risk to conveyance
- available storage south of Delta

**Table 10.1 Summary**

Alternative	Description of Risk	Net Reduction in Risk (0-1)
Exist. Cond.		
No-action		
1A		
1B		
1C		
2A		
2B		
2D		
2E		
3A		
3B		
3E		
3H		
3I		

Values are on a scale from 0 to 1; with 1 representing the lowest risk achievable from the range of alternatives.

## Total Cost

**11. Total Cost**

**Initial Cost** ( present value and annualized costs for time sequence):

- Study, design & permitting
- Construction
- Mitigation
- Other

**Annual Costs** ( present value and annualized costs for time sequence:)

- Operation and maintenance
- Monitoring
- Reoccurring annual purchases
- Other

**Table 11.1 Summary**

Alternative	Initial Cost	Annual Cost
Exist. Cond.		
No-action		
1A		
1B		
1C		
2A		
2B		
2D		
2E		
3A		
3B		
3E		
3H		
3I		

Lower costs will be provided the highest ranking.

## Assurances

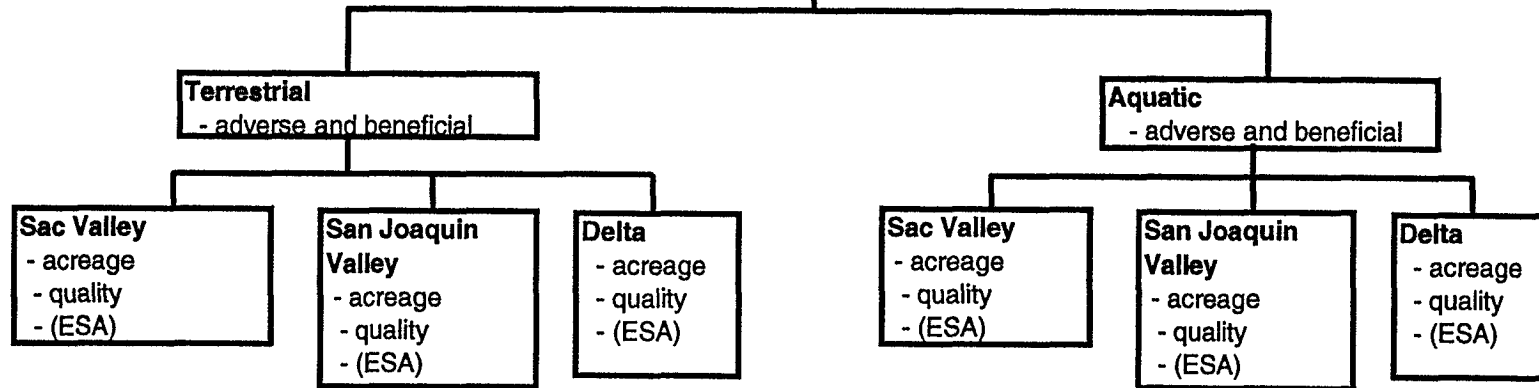
**12. Assurances Difficulty**

Qualitative assessment considering the sizes and complexity of storage and conveyance facilities. The difficulty in developing workable assurances will increase incrementally with increased modifications to the existing system.

**Table 12.1 Summary**

Alternative	Storage/Conveyance Facility Description	Difficulty (0-1)
Exist. Cond.		
No-action		
1A		
1B		
1C		
2A		
2B		
2D		
2E		
3A		
3B		
3E		
3H		
3I		

Values are on a scale from 0 to 1; with 0 representing the most difficulty and 1 the least difficulty achievable from the range of alternatives.

**13. Habitat Impacts****Table 13.1 Summary**

Alternative	Adverse Impacts						Beneficial Impacts					
	Terrestrial			Aquatic			Terrestrial			Aquatic		
	Acreage	Quality	ESA	Acreage	Quality	ESA	Acreage	Quality	ESA	Acreage	Quality	ESA
Exist. Cond												
No-action												
1A												
1B												
1C												
2A												
2B												
2D												
2E												
3A												
3B												
3E												
3H												
3I												

Summarized from regions on following sheets

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**Table 13.2 Terrestrial Habitat Adverse Impacts**

Alternative	Sac Valley			San Joaquin Valley			Delta		
	Acreage	Quality	ESA	Acreage	Quality	ESA	Acreage	Quality	ESA
Exist. Cond									
No-action									
1A									
1B									
1C									
2A									
2B									
2D									
2E									
3A									
3B									
3E									
3H									
3I									

**Table 13.3 Terrestrial Habitat Beneficial Impacts**

Alternative	Acreage	Sac Valley		San Joaquin Valley			Delta		
		Quality	ESA	Acreage	Quality	ESA	Acreage	Quality	ESA
Exist. Cond									
No-action									
1A									
1B									
1C									
2A									
2B									
2D									
2E									
3A									
3B									
3E									
3H									
3I									

**Table 13.4 Aquatic Habitat Adverse Impacts**

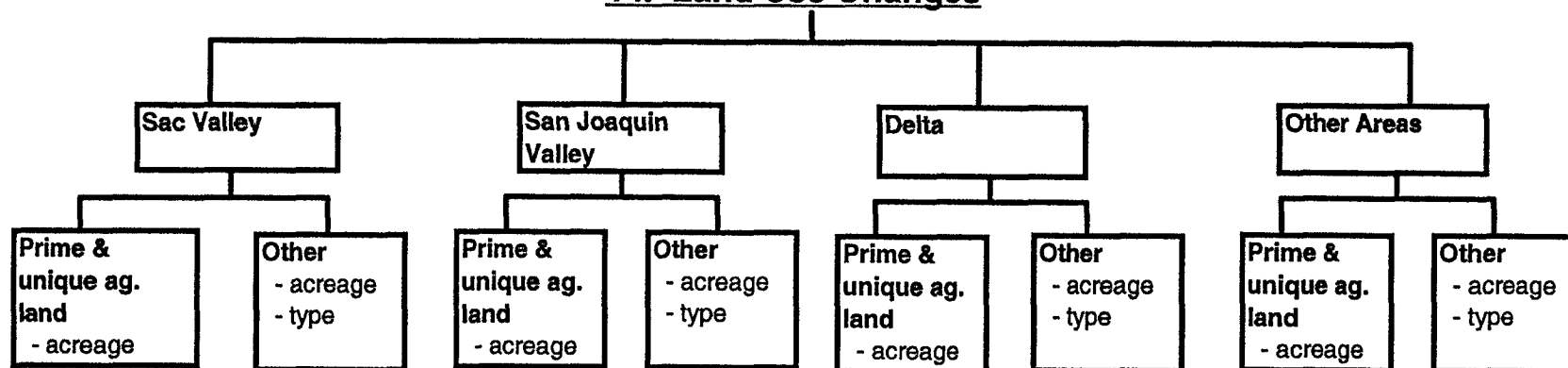
Alternative	Sac Valley			San Joaquin Valley			Delta		
	Acreage	Quality	ESA	Acreage	Quality	ESA	Acreage	Quality	ESA
Exist. Cond									
No-action									
1A									
1B									
1C									
2A									
2B									
2D									
2E									
3A									
3B									
3E									
3H									
3I									

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**Table 13.5 Aquatic Habitat Beneficial Impacts**

Alternative	Sac Valley			San Joaquin Valley			Delta		
	Acreage	Quality	ESA	Acreage	Quality	ESA	Acreage	Quality	ESA
Exist. Cond									
No-action									
1A									
1B									
1C									
2A									
2B									
2D									
2E									
3A									
3B									
3E									
3H									
3I									

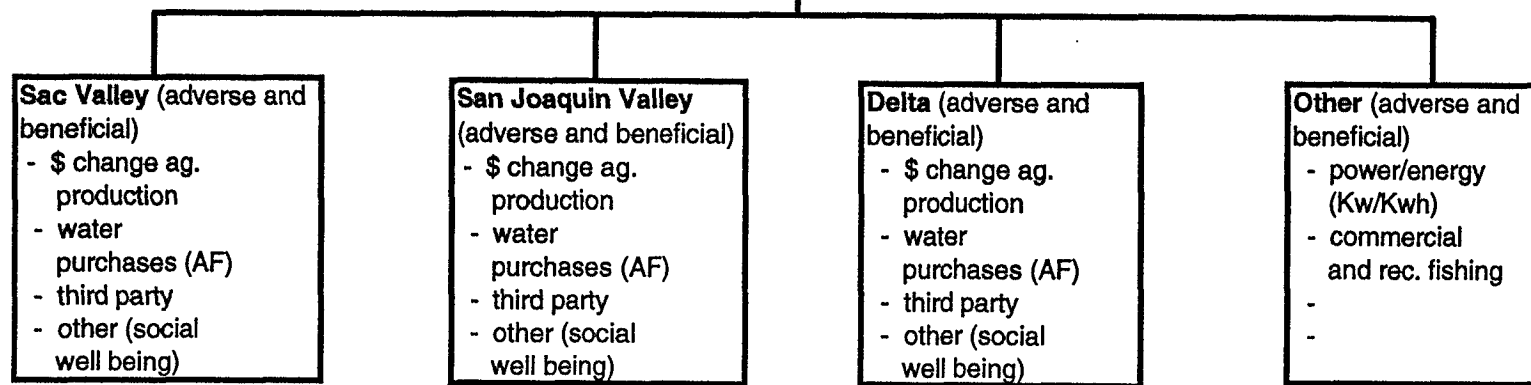
## Land Use

**14. Land Use Changes****Table 14.1 Summary**

Alternative	Sac Valley			San Joaquin Valley			Delta			Other Areas		
	Prime ag. (acreage)	Other (acreage)	Other (type)	Prime ag. (acreage)	Other (acreage)	Other (type)	Prime ag. (acreage)	Other (acreage)	Other (type)	Prime ag. (acreage)	Other (acreage)	Other (type)
Exist. Cond.												
No-action												
1A												
1B												
1C												
2A												
2B												
2D												
2E												
3A												
3B												
3E												
3H												
3I												

The least land use change will be provided the highest ranking.

## 15. Socio-Economic Impacts



**Table 15.1 Summary**

Alternative	Adverse Impacts						Beneficial Impacts					
	\$ ag. prod.	AF water purch.	Third Party	Other	Other	Other	\$ ag. prod.	AF water purch.	Third Party	Other	Other	Other
Exist. Cond												
No-action												
1A												
1B												
1C												
2A												
2B												
2D												
2E												
3A												
3B												
3E												
3H												
3I												

Table 15.2 Sac Valley Impacts

Alternative	Adverse Impacts						Beneficial Impacts					
	\$ ag. prod.	AF water purch.	Third Party	Other	Other	Other	\$ ag. prod.	AF water purch.	Third Party	Other	Other	Other
Exist. Cond												
No-action												
1A												
1B												
1C												
2A												
2B												
2D												
2E												
3A												
3B												
3E												
3H												
3I												

**Table 15.3 San Joaquin Valley Impacts**

Alternative	Adverse Impacts						Beneficial Impacts					
	\$ ag. prod.	AF water purch.	Third Party	Other	Other	Other	\$ ag. prod.	AF water purch.	Third Party	Other	Other	Other
Exist. Cond												
No-action												
1A												
1B												
1C												
2A												
2B												
2D												
2E												
3A												
3B												
3E												
3H												
3I												

The lowest socio-economic impacts will be provided the highest ranking.



Table 15.4 Delta Impacts

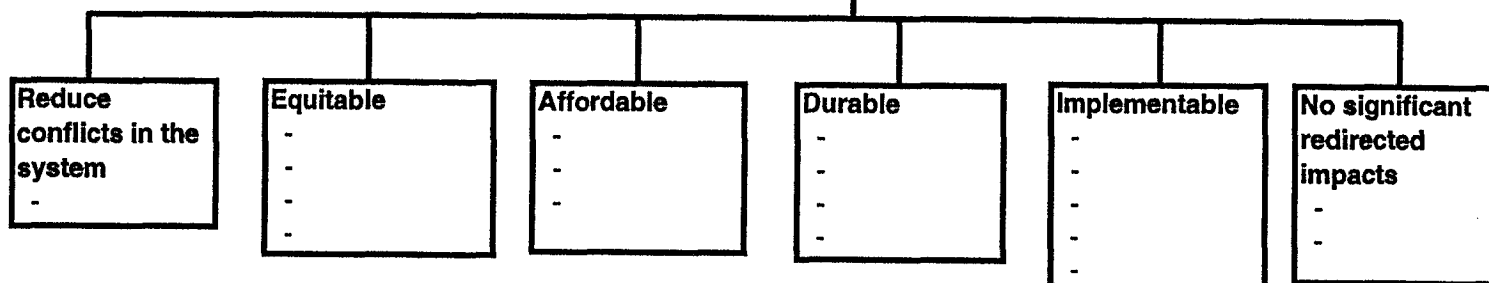
Alternative	Adverse Impacts						Beneficial Impacts					
	\$ ag. prod.	AF water purch.	Third Party	Other	Other	Other	\$ ag. prod.	AF water purch.	Third Party	Other	Other	Other
Exist. Cond												
No-action												
1A												
1B												
1C												
2A												
2B												
2D												
2E												
3A												
3B												
3E												
3H												
3I												

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Table 15.5 Other Impacts

Alternative	Adverse Impacts						Beneficial Impacts					
	Power energy	Fishing	Other	Other	Other	Other	Power energy	Fishing	Other	Other	Other	Other
Exist. Cond												
No-action												
1A												
1B												
1C												
2A												
2B												
2D												
2E												
3A												
3B												
3E												
3H												
3I												

## Solution Principles

**16. Consistency with Solution Principles**

Consider the supporting criteria within each solution principle.

**Table 16.1 Summary**

Alternative	Reduce Conflicts	Equitable	Affordable	Durable	Implementable	No Significant Redirected Impacts
Exist. Cond.						
No-action						
1A						
1B						
1C						
2A						
2B						
2D						
2E						
3A						
3B						
3E						
3H						
3I						

The best conformance with solution principles will be provided the highest ranking.

## Phasing

**17. Ability to Phase Facilities****Qualitative**

- South Delta export capacity
- Upstream storage (AF)
- Aqueduct storage (AF)
- Isolated facility (cfs)
- In-Delta storage (AF)
- Alternate diversion points
- Groundwater

**Table 17.1 Summary**

Alternative	Description of Facility Phasing	Measure of Phasing (0-1)
Exist. Cond.		
No-action		
1A		
1B		
1C		
2A		
2B		
2D		
2E		
3A		
3B		
3E		
3H		
3I		

Values are on a scale from 0 to 1; with 1 representing the easiest phasing achievable from the range of alternatives.

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## Brackish Water

**18. Brackish Water Habitat**

**Critical Year, extent of brackish water habitat** (compare with existing standards)

- # days X-2 (duration)
- location and surface area/volume
- time of year

**Average Year extent of brackish water habitat** (compare with existing standards)

- # days X-2 (duration)
- location and surface area/volume
- time of year

**Table 18.1 Summary**

Alternative	Critical year			Average year		
	# days X-2	Location/area/volume	Time of year	# days X-2	Location/area/volume	Time of year
Exist. Cond						
No-action						
1A						
1B						
1C						
2A						
2B						
2D						
2E						
3A						
3B						
3E						
3H						
3I						